

**IN THE DRAWINGS**

The drawings were objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

The drawings have not been changed, and the rejection of them is believed fully addressed in the remarks below with respect to the '112 rejection.

### **REMARKS**

This is in response to the Office Action mailed on June 6, 2006, and the references cited therewith.

Claims 13 - 20 are amended. Claims 34-49 are added. As a result, claims 13-20 and 34-49 are now pending in this application.

#### **§101 Rejection of the Claims**

Claims 13-20 were rejected under 35 USC § 101 as being directed to non-statutory subject matter. Specifically, the Office Action contends that claims 13-20 are representative of a method of representing an arc for reason that they claim a listing of differing steps that are non-functional because they are not manipulated by any of the statutory processes ( *i.e.*, processes, machines, manufactures, and compositions of matter). The Office Action further contends that the claims describe nothing more than the manipulation of basic mathematical constructs, the paradigmatic “abstract idea.” Lastly, the Office Action states that the claim language does not represent a practical application by physical transformation of a useful, concrete, and tangible result to form the basis of statutory subject matter.

The Applicant respectfully traverses this rejection. If a claim recites a useful manufacture by identifying the physical structure of the manufacture in terms of hardware, or hardware and software, then the claim recites a statutory product. *See e.g., In re Lowry*, 32 F.3d 1579, 1583, 32 USPQ2d 1031, 1034-1035 (Fed. Cir. 1994). Moreover, such a claim to a specific manufacture has a practical application in the technological arts. *See In re Alappat*, 33 F.3d 1526, 1544, 31 USPQ2d 1545, 1557 (Fed. Cir. 1994). The Applicant respectfully submits that a computer readable medium having a plurality of archetype definitions, a plurality of implementations for each archetype definition, and a plurality of domain-independent archetype instance modeling entities derived from each archetype definition, all within the boundaries of a graphical model-based development environment, is a manufacture of hardware and software, with a practical application in the technological arts, and as such, is patentable subject matter under 35 U.S.C. § 101.

Claim 13, as amended, recites a computer implemented method of representing an arc which comprises “selecting multiple vertices of the arc, obtaining trapezoids corresponding to

the vertices, obtaining a texture having multiple columns of texels, representing the trapezoids as triangles and mapping the texture to the triangles.” It is these constructs, in a graphical model-based development environment, which are functionally descriptive, and which cause a computer or other machine to function in a particular manner, and as such recite a statutory product that has a practical application in the technological arts. More specifically, as disclosed in the application, the functions or algorithms are implemented in software or a combination of software and human implemented procedures in one embodiment. The software comprises computer executable instructions stored on computer readable media, and executed by a computing device, according to one embodiment (FIG. 3). Such multi-functional capability can be performed on one or more modules, and the embodiments described are merely examples. Thus, such programming interfaces permit embodiments to be domain independent---a clear practical application in the technological arts. High fidelity arcs may then be profiled into different modeling notations. Texture mapping of an arc is yet another practical aspect of the present disclosure involving the process of mathematical mapping of the texture from one domain to another. (Specification, page 2, paragraphs 14-15).

The Applicant respectfully submits that claims 13 recites a specific implementation of hardware and/or software, and therefore recites statutory subject matter. Dependent claims 14-20 are believed allowable at least for their dependence upon independent claim 13. Reconsideration and withdrawal of the rejection of claims 13-20 is therefore requested.

#### §112 Rejection of the Claims

Claims 13-20 were rejected under 35 USC § 112, first paragraph, as failing to comply with the enablement requirement. The applicant respectfully traverses these grounds for rejection. As described in MPEP § 2164 et seq., the following represents the *prima facie* case that the Examiner must provide in order to maintain a rejection of nonenablement with respect to the disclosure of a patent application under 35 U.S.C. § 112, first paragraph:

1. a rational basis as to
  - a. why the disclosure does not teach, or
  - b. why to doubt the objective truth of the statements in the disclosure that purport to teach;
2. the manner and process of making and using the invention;
3. that correspond in scope to the claimed invention;
4. to one of ordinary skill in the pertinent technology;

5. without undue experimentation; and
6. dealing with subject matter that would not already be known to the skilled person as of the filing date of the application.

Since the Examiner has not provided evidence supporting each of these elements, the Examiner had not made out a *prima facie* case for nonenablement under 35 U.S.C. § 112, first paragraph.

Further, the applicant respectfully submits that the specification does provide enablement commensurate with the scope of the claims 13-20 for the following reasons:

Regarding claim 13, the applicant's specification at page 4, paragraph 10 describes "The functions or algorithms described herein are implemented in software or a combination of software and human implemented procedures in one embodiment." "Further, such functions correspond to modules, which are software, hardware, firmware or any combination thereof. Multiple functions are performed in one or more modules as desired, and the embodiments described are merely examples. The software is executed on a digital signal processor, ASIC, microprocessor, or other type of processor operating on a computer system, such as a personal computer, server or other computer system. The algorithms can also be implemented in hardware using common control logic such as an FPGA or ASIC." These portions of the figures and specification, among others, enable a person of ordinary skill in the art to make and use the invention commensurate with the scope of claim 13, as it pertains to means and module.

Further the applicant's specification beginning at page 12, paragraph 37 and continuing to page 13, paragraph 38, renders one example using pseudo-code of "selecting multiple vertices"; "obtaining trapezoids"; "obtaining a texture"; "representing the trapezoids as triangles"; and "mapping the texture," as recited in claim 13. Additionally, the applicant believes that entry of the proposed amendment to claim 13, adding "computer implemented" is responsive to and moots the prior rejection. Applicant respectfully submits that the rejection of claim 13 has been overcome, and that claim 13 is in condition for allowance

Regarding claim 14, the term "line profile" is a term of art common to those skilled in the art as a method to observe a different dimension of a graphical representation such as the side view of a topical representation. The description of "column texture" is provided in the applicant's specification at least at page 5, paragraphs 13-15, which provides "Texture map 165 is comprised of multiple rows and columns of texels. Each column in the texture 165 has a

gradient intensity from dark or black as seen at 166 to bright at 167 and back to dark or black at 168. The brightest spot 167 corresponds to the center of the line defining circle 110, and the black portions 166 and 168 correspond to the inside and outside edges of the line defining circle 110 and to all texels not between the inner and outer edge of the line.” Further page 8, paragraph 26 provides “[t]he size of the texture is first selected, and then the radial span of the trapezoid is determined from that. In one embodiment, the texture patch is 64 texels tall and 32 texels wide. Each texel represents  $\frac{1}{4}$  of a pixel along each column (for super-sampling the image to achieve anti-aliasing).” Applicant respectfully submits that the rejection of claim 14 has been overcome, and that claim 14 is in condition for allowance

Claim 15 was rejected under the assertion that it is unclear how exactly “a column” of texels is being used. The applicant believes that entry of the proposed amendment to claim 15, replacing “a column of texels” with “at least one texel column”<sup>1</sup> is responsive to and moots the rejection of claim 15.

Claim 16 was rejected under the assertion that it is unclear how the texture is applied symmetrical about a midline of the trapezoids. The applicant traverses this rejection as the specification provides, at least, that “the entire row contacts line 135 of the rendering trapezoid with the last column mapping to point 150”<sup>2</sup> and “[t]his combination of rows forms a symmetrical texture about the center column that can be drawn from left to right, or right to left.”<sup>3</sup> Applicant respectfully submits that the rejection of claim 16 has been overcome, and that claim 16 is in condition for allowance

Claim 17 was rejected under the assertion that a difference between a “perspective view” and “a reverse perspective view” is unclear. The applicant directs the Examiner’s attention to FIG. 4, having perspective correction (reverse perspective applied) and FIG. 5 having no perspective correction. As described in the specification, “[t]he method of applying reverse perspective view compensation improves the appearance of the circle.”<sup>4</sup> Additionally, “perspective correction is used to maintain orthogonality for mapping of the texture into the triangle strip. A reverse mapping of this perspective distortion during generation of texture is

---

<sup>1</sup> Applicant specification Page 5, paragraph 15.

<sup>2</sup> Applicant specification Page 5, paragraph 15.

<sup>3</sup> Applicant specification Page 5, paragraph 16.

<sup>4</sup> Applicant specification Page 11, paragraph 34.

used to minimize distortion in the texture mapping.”<sup>5</sup> Further, the pseudo-code for an example implementation of the reverse perspective view transformation is provided, at least, at Page 12, paragraph 37. Applicant respectfully submits that the rejection of claim 17 has been overcome, and that claim 17 is in condition for allowance

Claim 18 was rejected under the assertion that a description for “wherein each column of texels represents a single radial bound spatially by trapezoid upper and lower cords” cannot be found. The applicant believes that entry of the proposed amendment to claim 18, replacing “column of texels” with “texel column”<sup>6</sup> is responsive to and moots the rejection of claim 18.

Claim 19 was rejected under the assertion that a description for “selecting a texture from a number of textures based on the size of the radius and line width of the arc” is needed. The applicant traverses this rejection as the specification provides, according to one embodiment, “[f]or each arc, encountered, the radius and line width is compared to the existing control entries. If a match is found, then that existing texture is used. If no match is found, then a new texture is generated for this line width and radius.”<sup>7</sup> Applicant respectfully submits that the rejection of claim 19 has been overcome, and that claim 19 is in condition for allowance

Claim 20 was rejected under the assertion that it is unclear what is meant by “a radial bounded by the top and bottom of the trapezoids.” The applicant directs the Examiner’s attention to the specification which provides:

“The first lower corner maps to an endpoint, such as endpoint 145 of the arc 120 and the entire row contacts line 135 of the rendering trapezoid with the last column mapping to point 150. Rows then extend toward a upper corner of the rectangle, moving toward a top 175 of the rectangle, corresponding to the point on the arc where the longer side 130 contacts the outer edge of the arc.”<sup>8</sup>

Applicant respectfully submits that the rejection of claim 20 has been overcome, and that claim 20 is in condition for allowance

The Office Action alleges that Claim 16 was rejected under 35 USC § 112, second paragraph, “as being indefinite for failing to particularly point out and distinctly claim the

---

<sup>5</sup> Applicant specification Page 5, paragraph 17.

<sup>6</sup> Applicant specification Page 5, paragraph 15.

<sup>7</sup> Applicant specification Page 8, paragraph 25.

<sup>8</sup> Applicant specification Page 7, paragraph 15.

subject matter which applicant regards as the invention.” The applicant respectfully disagrees regarding the indefiniteness of the quoted passage. The Board of Patent Appeals and Interferences has stated:

In rejecting a claim under the second paragraph of 35 U.S.C. § 112, it is incumbent on the examiner to establish that one of ordinary skill in the pertinent art, when reading the claims in light of the supporting specification, would not have been able to ascertain with a reasonable degree of precision and particularity the particular area set out and circumscribed by the claims. *Ex parte* Wu, 10 USPQ 2d 2031, 2033 (B.P.A.I. 1989)(citing *In re* Moore, 439 F.2d 1232, 169 USPQ 236 (C.C.P.A. 1971); *In re* Hammack, 427 F.2d 1378, 166 USPQ 204 (C.C.P.A. 1970)).

The M.P.E.P. adopts this line of reasoning, stating that:

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (1) The content of the particular application disclosure;
- (2) The teachings of the prior art; and
- (3) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.<sup>9</sup>

Applicant respectfully submits that the claim language in question, when analyzed in light of the content of the application disclosure, is not indefinite. The application disclosure, at Page 5, paragraph 15, provides that:

“[t]exture map 165 is comprised of multiple rows and columns of texels. Each column in the texture 165 has a gradient intensity from dark or black as seen at 166 to bright at 167 and back to dark or black at 168. The ***brightest spot 167 corresponds to the center of the line defining circle 110***, and the black portions 166 and 168 correspond to the inside and outside edges of the line defining circle 110 and to all texels not between the inner and outer edge of the line” [emphasis added].

The application further discloses, at Page 5, paragraph 16, the specification provides “[t]his combination of rows forms ***a symmetrical texture about the center column*** that can be drawn from either left to right, or right to left” [emphasis added]. Applicant respectfully submits that the rejection of claim 16 has been overcome, and that claim 16 is in condition for allowance.

---

<sup>9</sup> MPEP § 2173.02.

These remarks are also believed to address the rejection of the drawings, obviating the need for any drawing revisions. Withdrawal of the rejection is respectfully requested.

§103 Rejection of the Claims

The Office Action asserts that claims 13-17 and 20 were rejected under 35 USC § 103(a) as being unpatentable over Trow et al. (5,461,706, hereinafter as “Trow”) in view of Michail et al. (US 2004/0263516, hereinafter as “Michail”). The rejection is respectfully traversed at least on the grounds that neither Trow nor Michail alone or combined teach or suggest the last three elements of each of the independent claims 13, 34 and 42: “obtaining a texture having multiple columns of texels; representing the trapezoids as triangles; and mapping the texture to the triangles.”

Applicant does not admit that Michail is prior art. Applicant, therefore, respectfully reserves the right to swear back of the cited Michail patent publication, if necessary, at some time in the future. Nevertheless, Applicant respectfully submits that claims 13-17 and 20 are distinguishable over Michail and Trow for the following reasons:

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To do that the Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would lead an individual to combine the relevant teaching of the references. *Id.* An invention can be obvious even though the suggestion to combine prior art teachings is not found in a specific reference.<sup>10</sup> At the same time, however, although it is not necessary that the cited references or prior art specifically suggest making the combination, there must be some teaching somewhere which provides the suggestion or motivation to combine prior art teachings and applies that combination to solve the same or similar problem which the claimed invention addresses. One of ordinary skill in the art will be presumed to know of any such teaching.<sup>11</sup>

Applicant respectfully submits that the Office Action did not make out a *prima facie* case of obviousness for the following reasons:

---

<sup>10</sup> *In re Oetiker*, 24 USPQ2d 1443 (Fed. Cir. 1992).

<sup>11</sup> *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) and *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979).

There is no suggestion to combine Michail with Trow because a suggestion to combine must come from the prior art and not from the applicant's specification or impermissible hindsight.<sup>12</sup> The applicant can find no teaching or suggestion in the cited portions of the Trow patent, or in any other portion of that patent that discloses "obtaining a texture having multiple columns of texels; representing the trapezoids as triangles; and mapping the texture to the triangles" as claimed in independent claim 13. The Trow patent does relate to constructing curves using the Bezier curve methodology, which builds a polynomial function from a set of control points and incorporates a tangent to the curve at an end point.<sup>13</sup> The Office Action concedes that Trow is silent as to representing the trapezoids as triangles and mapping texture to the triangles and therefore looks to Michail to fill this void. However, Michail does not address representation of arcs as it relates to scanline trapezoids using rasterization.<sup>14</sup>

Further, the Office Action looks to the Abstract of the Michail reference to suggest that representing arcs by dividing into trapezoids and triangles is well known in the art yet fails to recognize the applicant's identification of such methods as wasteful in terms of storage and requires two-dimensional super sampling, which is overcome in the present application.<sup>15</sup>

Therefore, the Applicant respectfully requests withdrawal of the rejection of claim 13. Claims 14-17 and 20 are dependent from claim 13 which is patentable over Trow and Michail individually or in combination, for the reasons stated above. Thus claims 14-17 and 20 are also patentable, for the same reasons since they contain all of the features of claim 13. Additionally, claims 14-17 and 20 add further features to claim 13, such as a "line profile" and "transitioning from dark to light to dark" which also distinguish those claims from the cited combination of Trow and Michail.

For all of the reasons stated above, Applicant suggests that the Office Action has failed to state a *prima facie* case of obviousness as to any of the pending claims. Thus, Applicant submits that claims 13-17 and 20 are allowable over the cited patent and publication and withdrawal of objections is respectfully requested.

---

<sup>12</sup> **Error! Main Document Only.** *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); MPEP § 2143. The Examiner must avoid hindsight. *In re Bond*, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990).

<sup>13</sup> Trow, Col. 5, lines 20-28.

<sup>14</sup> Michail, Col. 4, paragraph 53.

<sup>15</sup> Applicant specification, Page 4, paragraph 11.

The Office Action asserts that claims 18-19 were rejected under 35 USC § 103(a) as being unpatentable over Trow in view of Michail as applied to claim 13 above, and further in view of Foley (Computer Graphics: Principles and Practice, Second Edition). For the above stated reasons, claim 13 is believed allowable over both Trow and Michail, either individually or in combination, therefore claims 18 and 19, at least by way of their dependence from claim 13, are allowable. Withdrawal of the rejection of claims 18 and 19 is respectfully requested.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6972 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

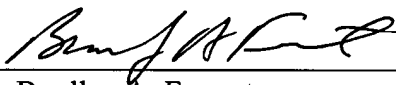
Respectfully submitted,

WILLIAM R. HANCOCK

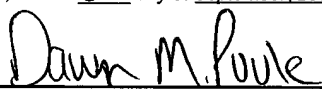
By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. Box 2938  
Minneapolis, MN 55402  
(612) 373-6972

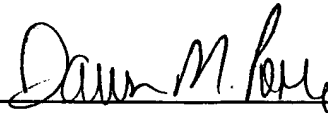
Date 9-6-2006

By   
Bradley A. Forrest  
Reg. No. 30,837

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 6<sup>th</sup> day of September, 2006.



Name



Signature